

## **Abstract**

5                   **A method for thermally working a workpiece,  
thermal working machine therefor, and cutting or welding tool  
suited for use in the working machine**

10 In a known thermal working machine for working a workpiece, a thermal working  
tool (1) is provided that is movable along the workpiece surface (7) and comprises  
a torch head (2) which has exchangeably mounted thereon cutting or welding  
tools (3; 4; 5) extending between the torch head (2) and the workpiece surface (7).  
A distance control for setting a predetermined working distance (A) between the  
15 working tool (1) and the workpiece surface (7) is carried out by means of a mag-  
netic system, an alternating magnetic field being produced in a sensor body with  
ferromagnetic properties above the workpiece surface (7). Starting from this, in  
order to permit a local measurement of even large working distances, the inven-  
tion suggests that the torch head (2) and at least one of the cutting or welding  
20 tools (3; 4; 5) should contain ferromagnetic material and form at least part of the  
sensor body (2; 3; 4; 5). The method for controlling the working distance is char-  
acterized in that the magnetic field produced is sensed by means of two measur-  
ing coils, the phase position of the measurement signals is evaluated, and a  
phase shift determined in this way is used for controlling the working distance (A).

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